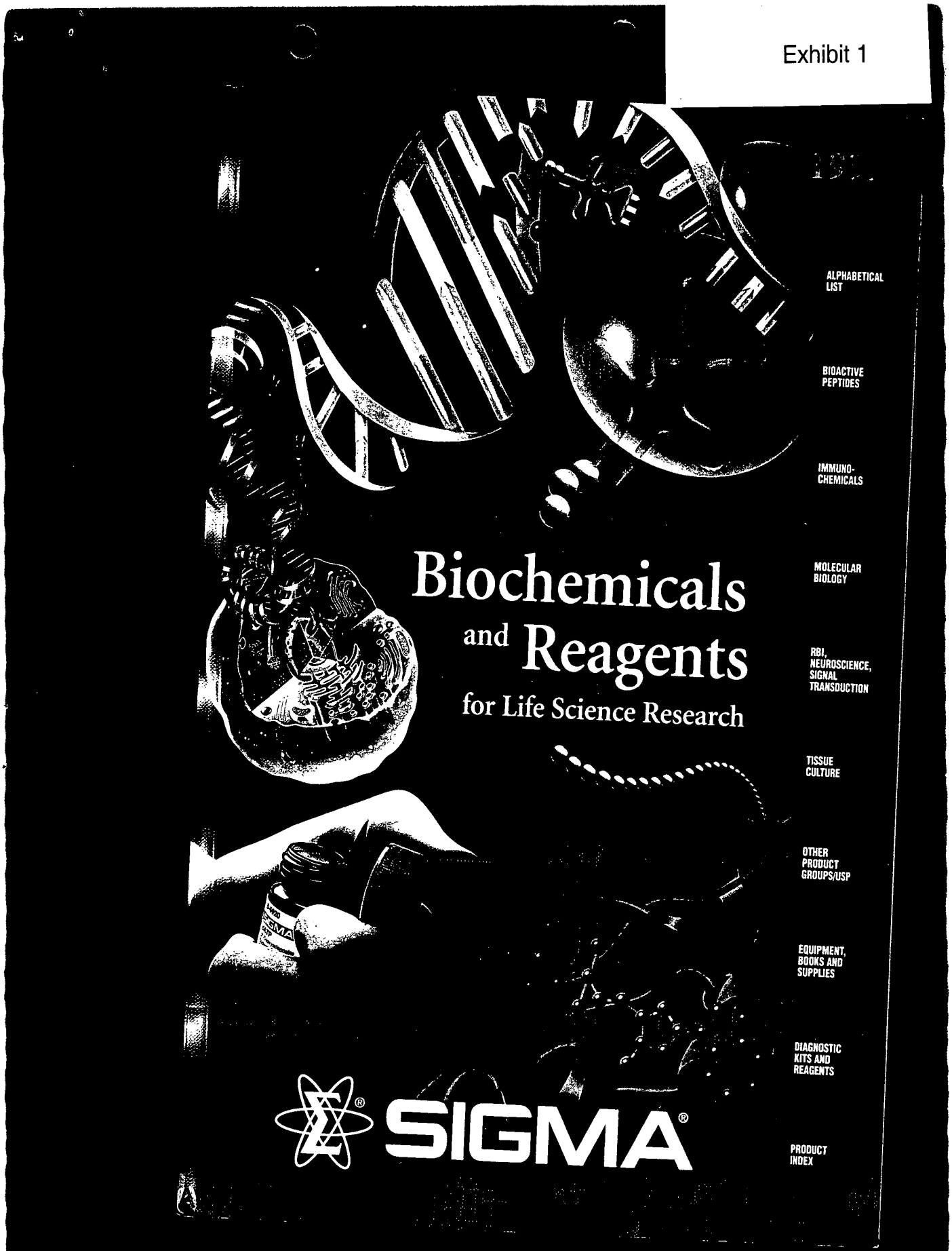
Exhibit 1


ALPHABETICAL LIST
BIOACTIVE PEPTIDES
IMMUNO-CHEMICALS
MOLECULAR BIOLOGY
RBI, NEUROSCIENCE, SIGNAL TRANSDUCTION
TISSUE CULTURE
OTHER PRODUCT GROUPS/USP
EQUIPMENT, BOOKS AND SUPPLIES
DIAGNOSTIC KITS AND REAGENTS
PRODUCT INDEX
Biochemicals and Reagents
for Life Science Research
SIGMA®

1999

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To discuss applications or product-specific questions.

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The SIGMA-ALDRICH Family

PRODUCT NUMBER | US $

etic acid; N-Methylglycine)

25 g 34.10
on: <0.1% 100 g 52.10
water, 20°C):
ess
<0.1%
Mg: <0.0005%
Na: <0.05%
NH_4^+: <0.05%
P: <0.0005%
Pb: <0.001%
Zn: <0.0005%

NO_2 FW 89.09

10 g 7.65
NO_2 FW 89.09 25 g 13.75
100 g 21.70

10 g 12.45
NO_2 • HCl 25 g 19.45
100 g 71.35

/DRIDE 10 g 47.20
5-dioxopiperazine) 25 g 103.80

yellow crystals.
$H_{10}N_2O_2$ FW 142.2

/DROGENASE 10 units 66.10
eptor]
demethylating];EC 1.5.99.1)
onas sp.
wder containing approx. 30%
; balance approx. 60% sucrose,
phosphate buffer salts and trace

units per mg protein.
One unit will convert 1.0 µmole of
ine and formaldehyde per min at

/L ESTER 10 g 31.00

$C_5H_{11}NO_2$ • HCl FW 153.6

ASE
en oxidoreductase [demethylating];

One unit will form 1.0 µmole of
m sarcosine per min at pH 8.3 at

cter species 25 units 22.45
wder 100 units 61.65
rox. 50% 250 units 114.95
); balance
ssium gluconate and EDTA.
nits per mg protein.

species 1,000 units 91.50
wder
units per mg solid.

acterium 25 units 48.95

wder containing approx. 50%
); balance primarily phosphate
tose.
nits per mg protein.

(Continued)

h.com/techinfo

(Continuation of)
SARCOSINE OXIDASE

S 5896 2-8°C **From Pseudomonas species** 500 units 105.00
Lyophilized powder
containing approx. 30% protein (Biuret).
Activity: Approx. 5 units per mg protein.

SARCOSYL-
Peptides are listed using standard 3-letter abbreviations. For N-terminal sarcosyl-peptides see SAR- beginning on *Page 933*

SARKOSYL
See: N-Lauroylsarcosine, Sodium Salt *Page 626*

SAR-PRO-ARG p-NITROANILIDE 5 mg 44.75
S 9009 -0°C **Dihydrochloride** 10 mg 74.30
Chromogenic substrate for thrombin. 25 mg 147.75
Ref.: Duncan, A., et al., Clin. Chem., **31,** 853 (1985).
[75241-23-5] $C_{20}H_{30}N_8O_5$ • 2HCl FW 535.4

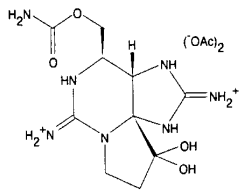
SARSASAPOGENIN 25 mg 36.80
S 8534 RT ([25S]-Spirostan-3β-ol; Parigenin) 100 mg 101.95
Minimum 98%
Sarsasapogenin and smilagenin are epimers at the 25-position. *See: Page 945*
[126-19-2] $C_{27}H_{44}O_3$ FW 416.6

SASRIN RESINS
See: FMOC-Amino Acid Sasrin Esters *Page 457*

SATA
See: S-Acetylthioglycolic Acid N-Hydroxysuccinimide Ester *Page 44*

SAUVAGINE
See: Bioactive Peptides *Page 1162*

SAXITOXIN 10 µg 41.90
S 1417 -20°C (STX)
◆ **Diacetate Salt**
From Protogonyaulax sp.
Minimum 95% (TLC)
Neurotoxin produced by dinoflagellates in "red tides". Shellfish consume these dinoflagellates and become toxic. Mode of action is as sodium channel blocker.
Not assayed by Sigma.
Ref.: 1. Levin, R.E., J. Food Chem., **15,** 405 (1991).
2. Narahashi, T., Fed. Proc., **31,** 1124 (1972).



[35523-89-8] $C_{10}H_{17}N_7O_4$ • $2C_2H_4O_2$ FW 419.4
R: 26/27/28 S: 45-26-36/37/39-22

neo-SAXITOXIN 10 µg 32.60
S 0170 -70°C (neo-STX) Shipped in dry ice
◆ **From Dinoflagellates**
Solution in 0.03 N acetic acid, pH 3.
One of a group of neurotoxins produced by the organism responsible for "red tides".
Sodium channel blocker
Ref.: 1.Yieytes, M.R., et al., Anal. Biochem., **221,** 87 (1993).
2. Wichmann, C.F., et al., Tetrahedron Lett., **22,** 1941 (1981).
[64296-20-4] $C_{10}H_{17}N_7O_5$ FW 315.3
R: 26/27/28 S: 45-26-36/37/39-22

NEW **SB 203580** 1 mg 85.00
S 8307 -20°C (4-[4-Fluorophenyl]-2-[4-methylsulfonylphenyl]-5-[4-pyridyl]-1H-imidazole)
Specific inhibitor of p38 MAP kinase/reactivating kinase.
Ref.: Ward, S.G., et al., Biochem. Soc. Trans., **25(2),** (1997).

SB(3-n)
This nomenclature refers to alkyl sulfobetaine detergents, N-alkyl-N,N-dimethylammonio-1-propanesulfonates. *See:*
N-Octyl-... (SB3-8) *Page 772*
N-Decyl-... (SB3-10) *Page 327*
N-Dodecyl-... (SB3-12) *Page 400*
N-Tetradecyl-... (SB3-14) *Page 990*
N-Hexadecyl-... (SB3-16) *Page 540*
N-Octadecyl-... (SB3-18) *Page 771*

SBFI 500 µg 143.85
S 0762 -0°C **Tetraammonium Salt** 1 mg 223.50
Approx. 90%
Fluorescent indicator for intracellular sodium
Ref.: 1. Minta, A., and Tsien, R.Y., J. Biol. Chem., **264,** 19449 (1989).
2. Chen, X., and Gross, R.W., Biochem., **33,** 13769 (1994).
[124549-08-2] $C_{44}H_{54}O_{15}N_6$ FW 906.9

SBFI-AM 100 µg 44.95
S 1148 -0°C Cell permeant sodium selective fluorescent indicator 1 mg 249.40
Ref.: 1. Minta, A., and Tsien, R.Y., J. Biol. Chem., **264,** 19449 (1989).
2. Chen, X., and Gross, R.W., Biochem., **33,** 13769 (1994).
[129423-53-6] FW 1127.1

SCANDIUM OXIDE 1 g 73.80
30,787-4 RT Rare earth content is 99.9% minimum, expressed as Sc_2O_3. 5 g 267.70
Not assayed by Sigma.
Aldrich Brand. Formerly Sigma Product S 1625.
[12060-08-1] Sc_2O_3 FW 137.9

R-(+)-SCH-23390 5 mg 47.00
C 0206 RT (R-[+]-CHMB: R-[+]-7-Chloro-8-hydroxy-3-methyl-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepine) 10 mg 75.00
Hydrochloride
Selective D_1 dopamine receptor antagonist
Ref.: O'Boyle, et al., J. Neurochem., **48,** 1039 (1987).
[112594-87-9] $C_{17}H_{18}ClNO$ • HCl FW 324.2

SCHAEDLER AGAR
See: Microbiological Media and Components *Page 2138*

SCHARDINGER α-DEXTRIN
See: α-Cyclodextrin *Page 311*

SCHARDINGER β-DEXTRIN
See: β-Cyclodextrin *Page 311*

SCHENK AND HILDERBRANDT BASAL SALT MIXTURE
See: Plant Tissue Culture Media and Reagents *Page 1890*

SCHENK AND HILDERBRANDT VITAMIN MIXTURE
See: Plant Tissue Culture Media and Reagents *Page 1890*

PRODUCT NUMBER | | | US $

LAURIC ACID BEHENYL ESTER 25 mg 8.25
L 0631 (Behenyl laurate)
-0°C **Approx. 99%**
[42231-82-3] $C_{34}H_{68}O_2$ FW 508.9

LAURIC ACID BUTYL ESTER 100 ml 16.40
L 4500 (Butyl laurate)
-0°C **Approx. 98% (capillary GC)**
d = 0.86 g/ml
[106-18-3] $C_{16}H_{32}O_2$ FW 256.4

LAURIC ACID N,N-DIMETHYLAMIDE 100 g 51.00
L 2136 (N,N-Dimethyllauramide)
RT **Approx. 95%**
d = 0.87 g/ml
[3007-53-2] $C_{14}H_{29}NO$ FW 227.4

LAURIC ACID ETHYL ESTER 50 ml 7.70
L 4625 (Ethyl laurate) 100 ml 12.15
-0°C **Minimum 99%** 500 ml 40.40
d = 0.86 g/ml
[106-33-2] $C_{14}H_{28}O_2$ FW 228.4

LAURIC ACID N-HYDROXY- 1 g 13.90
L 3900 **SUCCINIMIDE ESTER** 5 g 45.50
-0°C (N-Lauroyloxysuccinimide)
Approx. 98% (TLC)
Intermediate in the synthesis of lauroyl derivatives of amines and thiols.
Ref.: Al-Arif, A., et al., J. Lipid Res., **10**, 344 (1969). Lapidot, Y., et al., Biochim. Biophys. Acta, **145**, 292 (1967).
[14565-47-0] $C_{16}H_{27}NO_4$ FW 297.4

LAURIC ACID LAURYL ESTER 5 g 14.10
L 4750 (Lauryl laurate) 100 g 90.30
2-8°C *[13945-76-1]* $C_{24}H_{48}O_2$
FW 368.6

LAURIC ACID METHYL ESTER 1 g 5.85
L 7272 (Methyl laurate) 5 g 19.35
2-8°C **99+% (capillary GC)** 25 g 61.50
d = 0.87 g/ml
Also available as part of a kit.
See: Standards and Controls Section *Page 2199*
[111-82-0] $C_{13}H_{26}O_2$ FW 214.3

LAURIC ACID MYRISTYL ESTER 100 mg 17.20
L 9631 (Myristyl laurate)
-0°C **Approx. 99%**
[22412-97-1] $C_{26}H_{52}O_2$ FW 396.7

LAURIC ACID OLEOYL ESTER 1 g 57.50
L 9255 (Oleoyl laurate)
-0°C **Approx. 99%**
Sealed ampule (liquid).
[19149-85-0] $C_{30}H_{58}O_2$ FW 450.8

LAURIC ACID PALMITYL ESTER 100 mg 16.75
L 8641 (Palmityl laurate) 1 g 53.05
2-8°C **Approx. 99%**
[20834-06-4] $C_{28}H_{56}O_2$ FW 424.7

LAURIC ACID PROPYL ESTER 5 g 38.45
L 3253 (Propyl laurate)
-0°C **Approx. 99%**
d = 0.86 g/ml
[3681-78-5] $C_{15}H_{30}O_2$ FW 242.4

LAURIC ANHYDRIDE 1 g 15.70
L 1632 (Dodecanoic anhydride) 10 g 81.40
-0°C **Approx. 99%** 25 g 146.60
[645-66-9] $C_{24}H_{46}O_3$ FW 382.6
R: 36/37/38 S: 26-36

DL-LAUROYLCARNITINE 25 mg 14.05
L 3131 **CHLORIDE** 100 mg 36.45
-0°C *[7023-03-2]* $C_{19}H_{38}NO_4Cl$ 250 mg 71.20
FW 380.0 1 g 194.75

PRODUCT NUMBER | | | US $

LAUROYL CHLORIDE 100 ml 25.20
L 5503 (Dodecanoyl chloride)
-0°C **Approx. 99%**
◆ d = 0.92 g/ml
Sealed ampule.
[112-16-3] $C_{12}H_{23}ClO$ FW 218.8
R: 34 S: 26-27-36/37/39-3/7/9

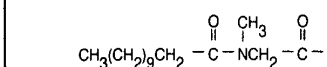
LAUROYLCHOLINE CHLORIDE 10 g 33.45
L 7262 *[25234-60-0]* $C_{17}H_{36}NO_2Cl$
2-8°C FW 321.9

LAUROYL COENZYME A
See: Coenzyme A and Derivatives *Page 283*

LAUROYL-(CARBONYL-^{14}C) COENZYME A
See: Radiochemicals *Page 2183*

1-LAUROYL-2-OLEOYL-3-PAL- 25 mg 117.30
L 0775 **MITOYL-rac-GLYCEROL**
-0°C **(C12:0/C18:1,[cis]-9/C16:0)**
(1-Dodecanoyl-2-[cis-9-octadecenoyl]-3-hexadecanoyl-rac-glycerol)
Approx. 98%
[51604-51-4] $C_{49}H_{92}O_6$ FW 777.3

N-LAUROYLSARCOSINE



L 5000 **Free Acid** 50 g 10.90
RT **Minimum 95%** 100 g 16.80
May be liquid at room temperature. 500 g 52.25
[97-78-9] $C_{15}H_{29}NO_3$ FW 271.4
R: 36/37/38 S: 26-36

L 5777 **Sodium Salt** 50 g 28.35
RT **SigmaUltra** 100 g 46.90
Minimum 97% 500 g 156.15
Solubility (0.1 M in water, 20°C): complete, very faint yellow
Insoluble matter: <0.1%
Al: <0.0005% Mg: <0.0005%
Ca: <0.005% NH_4^+: <0.05%
Cu: <0.0005% P: <0.01%
Fe: <0.005% Pb: <0.01%
K: ≤100 ppm Zn: <0.0005%
[137-16-6] $C_{15}H_{28}NO_3Na$ FW 293.4

L 5125 **Sodium Salt** 50 g 12.90
RT **Minimum purity: 94%** 100 g 21.30
See also: Molecular Biology Products *Page 1543* 500 g 66.40
1 kg 118.50
[137-16-6] $C_{15}H_{28}NO_3Na$
FW 293.4

LAURYL ACETATE 1 g 19.20
L 4003 **Minimum 99%**
2-8°C d = 0.86 g/ml
[112-66-3] $C_{14}H_{28}O_2$ FW 228.4

LAURYL ALCOHOL 500 g 11.90
L 5375 (1-Dodecanol; Dodecyl alcohol)
RT **Approx. 99%**
Also available as part of a kit.
See: Standards and Controls Section *Page 2200*
[112-53-8] $C_{12}H_{26}O$ FW 186.3
R: 36/37/38 S: 26-36

LAURYLAMINE
See: Dodecylamine *Page 400*

LAURYL BROMIDE
See: 1-Bromododecane *Page 195*

1-O-LAURYL-rac-GLYCEROL
See: 1-O-Dodecyl-rac-glycerol under Lipids *Page 401*

PURIFICATION

tion of)
GER RNA ISOLATION KITS

ard Isolation Kit 1 kit 255.45
nt for 6 preparations from
)⁷–3 × 10⁸ cultured cells or 400–1,000 mg
e
22-42-36/37/38-41 S: 26-36

REAGENTS

er: Cloning, Modifying Enzymes *Page 1556*

O-3-CHLOROPROPANE 200 ml 19.80

e for use in RNA extractions using any of the gents. BCP can be used in place of orm, and is less toxic than chloroform. It does ersely affect quality or quantity of the isolated

. Chomczynski, P. and Mackey, K., Anal. m., **225**, 163 (1995).
0-6] C_3H_6BrCl FW 157.4
6/37/38 S: 26-36

OL
er: Molecular Biology Reagents *Page 1623*

CHLORIDE
7-8] CsCl FW 168.4

99+%	5 g	11.30
50% solution <0.1	25 g	38.60
50% solution <0.02	100 g	98.50
01%	500 g	390.10
01%	6 × 100 g	472.70
RNase and	1 kg	571.60
e - None detected.	6 × 500 g	1872.00
>98%	25 g	16.80
50% solution <0.2	50 g	28.00
RNase and protease -	100 g	46.60
tected.	250 g	102.55
	500 g	184.80
	1 kg	276.15

ORM 25 ml 7.65
99+% 4 × 25 ml 23.45
for use in nucleic acid 500 ml 25.30
ion. When used 6 × 500 ml 121.10
with phenol, the
y of protein extraction from crude DNA is
d. Can also be used to remove traces of
rom aqueous DNA and RNA samples.
d with amylenes.
mbrook, J., et al., Molecular Cloning: A
ory Manual, Cold Spring Harbor Laboratory
p. E.3-E.4.
3] $CHCl_3$ FW 119.4
3-40-48/20/22 S: 36/37

ORM: ISOAMYL ALCOHOL 1 pt 25.50
1 qt 41.10
ed with amylene (2-methyl-
e)
for use in the purification of nucleic acids
mbrook, J., et al., Molecular Cloning: A
ory Manual, Cold Spring Harbor Laboratory
p. E.3-E.4.
5-23/24/25-41 S: 45-26-36/37/39

ONUCLEASE I
er: Cloning, Modifying Enzymes *Page 1556*

a-aldrich.com/techinfo

NUCLEIC ACID EXTRACTION AND PURIFICATION

PRODUCT NUMBER			US $
NEW E 4274 2-8°C	**ENDOTOXIN REMOVAL SOLUTION** A solution of Triton X-114 in Tris-buffered saline, pH 7.4. Useful for removal of endotoxins from a solution of plasmid DNA by phase separation.[1] A 25 ml aliquot is sufficient to treat 500 ml of lysate, from which 8-10 mg of endotoxin-free DNA can be isolated. **Ref.:** Cotton, M. et al., Gene Ther., **1**, 239 (1994). R: 36/37/38 S: 26-36	25 ml	25.00
	ETHANOL (Ethyl alcohol) Suitable for use in the precipitation of nucleic acids. US excise tax included; ATF license not required. *[64-17-5]* R: 11 S: 7-16		
NEW E 7023 RT	**Absolute (200 proof)** Water ≤0.005%	500 ml	25.50
NEW E 7148 RT	**95+% (190 proof)**	1 gal	110.00
	GUANIDINE THIOCYANATE *See under:* Molecular Biology Reagents *Page 1625*		
	HEXADECYLTRIMETHYLAMMONIUM BROMIDE *See under:* Molecular Biology Reagents *Page 1625*		
	ISOAMYL ALCOHOL	25 ml	7.15
I 9392 RT	(Isopentyl alcohol; 3-Methyl-1-butanol)	4 × 25 ml	21.90
		500 ml	23.60
	≥98.5% Suitable for use in nucleic acid purification. **Ref.:** Sambrook, J., et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory (1989) p. E.3-E.4. *[123-51-3]* $C_5H_{12}O$ FW 88.15 R: 10-22-41-37/38 S: 16-26-36/37/39-23	6 × 500 ml	112.95
	ISOPROPANOL	25 ml	7.25
I 9516 RT	(2-Propanol)	4 × 25 ml	22.05
	Purity: 99+% Water ≤0.05%	500 ml	23.75
	Suitable for use in the precipitation of nucleic acids. When compared to ethanol, 50% less is required for nucleic acid precipitation, thus minimizing the total volume to be centrifuged for DNA or RNA recovery. **Ref.:** Sambrook, J., et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory (1989) p. E.13-E.14. *[67-63-0]* C_3H_8O FW 60.10 R: 11 S: 7-16		
	N-LAUROYLSARCOSINE	50 g	15.35
L 9150 RT	**Sodium Salt**	100 g	23.85
	Purity: ≥97%	250 g	47.75
	DNase and RNase: None detected. Soluble in concentrated salt solutions that are commonly used in the cell lysis step of RNA purification **Ref.:** Sambrook, J., et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory, p. 7.20 (1989). *[137-16-6]* $C_{15}H_{28}NO_3Na$ FW 293.4		
	LITHIUM CHLORIDE *See under:* Molecular Biology Reagents *Page 1626*		
	LYSOZYME *See under:* Cloning, Modifying Enzymes *Page 1557*		

PRODUCT NUMBER			US $
	PHASE DIVIDER GEL For organic extractions of nucleic acids–forms a durable barrier between phases, facilitating decanting or pipetting into a fresh tube. • Improve nucleic acid recovery 20-30% • Reduce contamination from interphase • Gel is inert; does not interfere with subsequent enzymatic reactions • Convenient for samples from 10 µl to 20 ml The gel comes pre-dispensed in common sizes of centrifuge tubes. Just add your phenol or phenol/chloroform extraction mixture and spin. The gel migrates under centrifugal force, forming a barrier above the organic phase and interphase.		

Usage Suggestions

Organic phase → / ↓ Aqueous phase	phenol: chloroform: isoamyl alcohol	chloroform: isoamyl alcohol	water- or buffer-sat'd phenol: chloroform	water- or buffer-sat'd phenol
<0.5 M NaCl	L,H	L,H	L,H	L
<1 mg/ml BSA	L,H	L,H	L,H	L
Cleared lysate	H	H	H	NC
Tissue homogenate	L,H	L,H	L,H	L
RNA purification	H	H	H	NC

Notes: L = Light; H = Heavy; NC = not compatible

P 1723 RT	**Phase Divider Light/1.5** in 1.5 ml microcentrifuge tubes for 50-500 µl samples	6 / pkg	10.40
		200 / pkg	109.20
P 2098 RT	**Phase Divider Light/15** in 15 ml low-speed centrifuge tubes for 1-6 ml samples	10 / pkg	12.50
		50 / pkg	48.90
		100 / pkg	87.40
P 2348 RT	**Phase Divider Light/50** in 50 ml centrifuge tubes for 5-20 ml samples	10 / pkg	32.25
P 2598 RT	**Phase Divider Light/Syringe** in 3 ml syringes for dispensing into any size centrifuge tube	10 / pkg	59.30
P 1848 RT	**Phase Divider Heavy/1.5** in 1.5 ml microcentrifuge tubes for 50-500 µl samples	6 / pkg	10.40
		200 / pkg	109.20
P 1973 RT	**Phase Divider Heavy/10** in 10 ml high-speed centrifuge tubes for 1-4 ml samples	100 / pkg	87.40
P 2223 RT	**Phase Divider Heavy/15** in 15 ml low-speed centrifuge tubes for 1-6 ml samples	10 / pkg	12.50
		50 / pkg	48.90
		100 / pkg	87.40
P 2473 RT	**Phase Divider Heavy/50** in 50 ml centrifuge tubes for 5-20 ml samples	10 / pkg	32.25
P 2723 RT	**Phase Divider Heavy/Syringe** in 3 ml syringes for dispensing into any size centrifuge tube	10 / pkg	59.30

	PHENOL	25 g	26.25
P 1037 -20°C ◆	**99+%** Redistilled and packaged under nitrogen in amber bottles. Contains no preservatives Mg ≤2 ppm Pb ≤5 ppm Melting point: 40 ± 2°C *[108-95-2]* C_6H_6O FW 94.11 R: 24/25-34 S: 28-45	100 g	38.85
		500 g	88.20
		6 × 100 g	186.50